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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,171

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EXAMINER

KREINER, MICHAEL B

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,171	Applicant(s) ARAFAT ET AL.	
	Examiner Michael Kreiner	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 21-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-2, 5-10, 12-16, and 21-22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by G. S. Wing (U.S. Pat. No. 3,135,486).

Regarding claim 1, Wing teaches a leading edge member (21 in fig. 1) for an aircraft comprising: an exterior surface (col. 2 line 45) and an opposing interior surface (col. 2 line 52) forming a surface thickness between; wherein at least one pocket is recessed into the interior surface (23 in fig. 3, at least one pocket is disposed solely within the leading edge member, as clearly shown), each pocket defining a region of the leading edge member having a pocket thickness that is less than the surface thickness of the leading edge member, each pocket being configured to deform in response to an impact from an object with the leading edge member; wherein the leading edge member is configured for attachment to a substructure (fig. 4); wherein the leading edge member is configured for forming a forward portion of an airfoil; wherein the substructure is at least one of a substructure of a vertical fin, a substructure of a horizontal stabilizer, and a substructure of a wing member (fig. 4); and wherein the leading edge member is configured to protect the substructure by absorbing an impact energy from a collision with the object (leading edge members inherently absorb energy upon collision with an object).

Regarding claim 2, Wing teaches the leading edge member according to claim 1, wherein the leading edge member (col. 3 line 34) forms the leading edge of a wing member (col. 1 line 1).

Regarding claim 5, Wing teaches the leading edge member according to claim 1, wherein the pockets are formed by a chemical etching process (col. 2 lines 56-7).

Regarding claim 6, no weight is given to the process by which the pockets are formed, since the claim is drawn to an article and not a method.

Regarding claim 7, Wing teaches the leading edge member according to claim 1, wherein the leading edge member (col. 3 line 34) is curved about a longitudinal axis so as to form an upper airfoil surface and a lower airfoil surface (fig. 1, col. 2 lines 48-50).

Regarding claim 8, Wing teaches the leading edge member according to claim 7, wherein the at least one pocket comprises: a plurality of pockets (23) arranged in a selected pattern over the interior surfaces of the upper airfoil surface and the lower airfoil surface (fig. 3).

Regarding claim 9, Wing teaches the leading edge member according to claim 8, wherein each pocket (23) is formed in one of the following geometric shapes: circle, oval, rectangle, square (fig. 3).

Regarding claim 10, Wing teaches the leading edge member according to claim 8, wherein the pattern of pockets on the interior surface of the upper airfoil surface is a mirror image of the pattern of pockets on the interior surface of the lower airfoil surface (fig. 3).

Regarding claim 12, Wing teaches the leading edge member according to claim 1, further comprising: at least one rib member (30 in fig. 4) connected to the interior surface of the leading

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edge member for attaching the leading edge member to a substructure of the aircraft (col. 3 lines 17-22).

Regarding claim 13, Wing teaches the leading edge member according to claim 1, further comprising: a stiffening means (30 and 31) connected to the interior surface of the leading edge member for providing localized stiffness to the leading edge member.

Regarding claim 14, Wing teaches the leading edge member according to claim 13, wherein the stiffening means (30) is an elongated I-shaped beam (30 has flanges 32 and 33 along its top and bottom, giving it an I-beam cross section).

Regarding claim 15, Wing teaches the leading edge member according to claim 13, wherein the stiffening means (31) is not connected to a substructure of the aircraft (40) (col. 3 l. 48-54).

Regarding claim 16, Wing teaches the leading edge member according to claim 13, wherein the stiffening means (30) is also connected to a substructure of the aircraft (40).

Regarding claim 21, Wing teaches that the leading edge member is attached to the substructure using at least one fastener 31a.

Regarding claim 22, Wing teaches that the leading edge member is configured for detachment from the substructure by removing the at least one fastener (fig. 4, the leading edge member is attached only by the rivets, and so is configured for detachment by removing these rivets).

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wing as applied to claim 8 above. It would have been obvious to one of ordinary skill in the art at the time of the invention to create different pocket patterns on opposing sides of the leading edge member.

Airfoils typically have a concave under-camber, which greatly reduces the risk of bird collision, and thus reduces the need for reinforcement. The weight of the wing could be minimized by removing more material from the lower surface, resulting in a non-mirror image between the lower and upper surfaces.

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wing in view of Carlson et al. (U.S. Pat. No. 4,976,396).

Regarding claim 3, Wing teaches the leading edge member according to claim 1, wherein the leading edge member (col. 3 line 34) forms a leading edge (as previously discussed). Wing fails to teach a horizontal stabilizer. Carlson teaches an airplane with horizontal stabilizers (20 in fig. 1, col. 6 lines 17-20) as well as wings (14 in fig. 1, col. 6 lines 17-20). It would have obvious to one of ordinary skill in the art at the time of the invention to apply Wing's reduced-weight leading edge to horizontal stabilizers in order to reduce the weight of an aircraft.

Regarding claim 4, Wing teaches the leading edge member according to claim 1, wherein the leading edge member (col. 3 line 34) forms a leading edge (as previously discussed). Wing fails to teach a vertical fin. Carlson teaches an airplane with a vertical fin (18 in fig. 1, col. 6

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lines 17-20) as well as wings (14 in fig. 1, col. 6 lines 17-20). It would have obvious to one of ordinary skill in the art at the time of the invention to apply Wing's reduced-weight leading edge to a vertical fin in order to reduce the weight of an aircraft.

Response to Arguments

Applicant's arguments filed 4/22/2009 have been fully considered but they are not persuasive. Applicant argues on p. 9 that the Wing reference teaches the skin of an entire airfoil. Applicant is correct in this assertion; however it does not appear that the Applicant has claimed a leading edge member that is a separate and distinct element from the remainder of the airfoil's skin. The airfoil skin of Wing is therefore a leading edge member, and reads on the Applicant's invention as claimed. Applicant has argued that the leading edge member of Wing would not protect substructure from collision with a foreign object. Figure 4 clearly shows substructure (spar 40) that would be protected, should a bird fly into leading edge member 21.

Applicant's arguments regarding claim 15 are persuasive. A new grounds of rejection for claim 15 is described above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barron (U.S. Pat. No. 5,213,287) teaches a replaceable leading edge for an aircraft wing. This leading edge could be modified in light of Wing in order to lighten the leading edge but still make it strong.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Friday 9am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael R Mansen/
Supervisory Patent Examiner, Art Unit 3644

/M. K./
Examiner, Art Unit 3644